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*CHORISTISTIUM EUKRINES*, A NEW SERRANID FISH  
FROM FLORIDA, WITH NOTES ON RELATED SPECIES<sup>1</sup>

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A distinctive new species of the serranid genus *Chorististium* was recently collected in the Florida Keys. New material of *Chorististium rubre* (Poey) and *C. mowbrayi* (Woods and Kanazawa) permit extensions of known range and additions to previous descriptions. These data, including the description of the new species, are here reported.

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***Chorististium eukrines***, new species

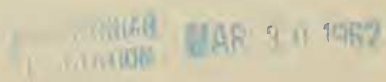
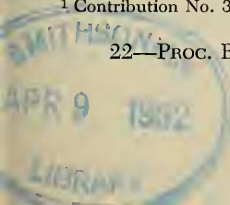
Figs. 1a-b, Tables 1 and 2

*Holotype*: ANSP 94357, 41.6 mm standard length, collected 2½ miles SSW of Alligator Reef lighthouse, Monroe County, Florida, in 150 feet, 22 May 1960, by Walter A. Starck, II, and Henry A. Feddern (CRR-F-229).

*Diagnosis*: A distinctive species of *Chorististium* characterized by a single, dark, median-lateral stripe from the snout tip almost to the posterior edge of the caudal fin. Fin-ray formula: dorsal fin—VI-I, 12 (last ray composite); anal fin—III, 8 (last ray composite); pectoral fin—13-13; branched caudal rays—15.

*Description*: The cream-colored body is distinctly marked with a dark brown to black lateral stripe (see Fig. 1a). In life the stripe is deep red brown becoming black on the posterior part of the caudal fin. Above the dark stripe on the body is a white stripe, becoming lemon yellow

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dorsally. The dorsal surface of the body and the spinous dorsal fin is yellowish tan. Below the median stripe is a pink line, followed by a lemon-yellow area merging into salmon pink on the ventral surface of the body including the anal fin. These stripes are not continuous onto the caudal fin or head.

The dorsal surface of the head and tip of the snout are salmon pink while the side of the head is yellow. Ventrally the underside of the jaws, isthmus and branchial area are white.

Both pectoral and pelvic fins are transparent and tinged with pink. The caudal fin is yellow above and below the stripe and the tips of the principal rays are white producing a noticeable terminal band.

Figure 1a shows the general body form. The body is compressed, moderately so anteriorly, more so posteriorly. Numerous small teeth occur on the posterior margin of the body scales. The lateral line is arched anteriorly becoming median at a point opposite the posterior end of the base of the anal fin.

The head, except for the lips, is scaled. The narial tubes are widely separated, the anterior ones being tubular and adjacent to the lip and the posterior pair are simple holes just anterior to the eyes. The maxillary extends beyond a point below the posterior margin of the pupil but not beyond the posterior margin of the eye. The free margin of the preopercle is not serrated.

Villiform teeth are present on the jaws, vomer, and palatines. Vomerine and palatine teeth are somewhat enlarged and depressible as are those of the inner series of the jaws. The tongue is long, free, and pointed.

The dorsal fins are separated by a ridge formed by the posterior dorsal spines, scaled over except for the tips. Of the eight dorsal spines the first is short and closely applied to the second while the third spine is the longest, the fourth, fifth, and sixth being progressively shorter. Twelve dorsal rays are present. Eleven elements are included in the anal fin, three spines, and eight rays. Of the three spines the first is short (half the length of the second) and the second and third are of approximately equal length, the second spine being the strongest. The pectoral fins contain 13 rays while the pelvic fins have a count of one spine and five rays.

The soft dorsal and anal fins are rather high and pointed, the proximal third of the anterior membranes being scaled, squamation decreasing posteriorly with the membrane between the last rays scaled only at the base. The basal two-thirds of the caudal and the proximal third of the pelvic fins are scaled.

Lengths of body parts expressed as per cent standard length (41.6 mm) are: head length—41; greatest depth of body (at origin of dorsal fin)—29; snout length—10; fleshy interorbital space—5.3; diameter of eye—8.2; postorbital head length—23; length of upper jaw—18; predorsal distance—47; preanal-fin distance—69; least depth of caudal peduncle—16; distance from base of last anal ray to midbase of caudal fin—19; length of longest (third) dorsal spine—12; length of longest (third) anal

spine—7; length of longest soft-dorsal ray—18; length of longest soft-anal ray—22; longest pectoral ray—25; longest pelvic ray—20; longest caudal ray—23.

Additional meristic data are: branchiostegal rays—7; opercular spines—3; gill rakers on first arch—17 (last four or five rakers rudimentary); segmented caudal rays—19; principle caudal rays—17; pores in lateral line from upper edge of the opercle to the caudal base—44; vertebrae— $10 + 14 = 24$ . A radiograph of this specimen is shown in Fig. 1b.

The name *eukrines* is from the Greek for distinct, well separated.

*Habitat*: The area in which this fish was collected is characterized by a number of small, low patches of rock, similar in appearance to the jagged Key limestone ("cay-rock") encountered along the shores of many islands in the West Indian region. These patches form a band, several hundred yards long by fifty yards wide, parallel to the main reef but nearly a mile farther out. This places the area within the usual boundaries of the Florida Current. Depth varies from 150 to 155 feet on a very gently sloping bottom composed of silty sand mixed with numerous shell particles.

There is little vegetation in this area. However, loggerhead sponges, *Sphaciospongia vesparia*, are common as is the large hydroid *Aglaophenia robusta*. One stony coral, *Mussa angulosa*, is frequently encountered and a few others such as *Meandrina danae* and *Manacina mayori* also occur here. A bivalve, *Spondylus americanus*, occurs on nearly every rock patch, and several small gastropods frequent the sandy areas. Other conspicuous invertebrates are ophiuroid brittle stars, several species of hermit crabs and a caridean shrimp, *Hippolyasmata grabhami*, reported by Randall (1958: 334) to be a parasite picker.

A number of fishes common to the shallower reefs are found in this deeper area as well as are several species which apparently do not venture into much shallower waters. Among the latter group are *Serranus tortugarum*, *S. annularis*, *Epinephelus niveatus*, *Lutjanus buccanella*, *L. aya*, *Holocentrus bullisi*, and *Scorpaena dispar*.

The holotype of *Chorististium eukrines* was collected in one of the larger rock patches with a small hand net. Another individual of the same species was seen by Henry A. Feddern during the same dive.

*Chorististium rubre* (Poey)

Fig. 1c, Tables 1 and 2

*Liopropoma* ? *rubre* Poey, 1861: 418 (type locality: Cuba).

*Material examined*: UMML 4140 (1, 64.9), about ½ mile SW of Alligator Reef lighthouse, Monroe County, Florida, in 20 feet, 16 August 1958, Walter A. Starck, II, and Dennis R. Paulson, CRR-F-156. UMML 4232 (1, 58.7), one mile SW of Alligator Reef lighthouse, Monroe County, Florida, in 40 feet, 22 September 1958, Walter A. Starck, II, CRR-F-181. UMML 5307 (1, 32.0), one mile SW of Alligator Reef lighthouse, Monroe County, Florida, in 50 feet, 25 October 1958, Walter A. Starck, II, and Walter Charm, CRR-F-201. UMML 6198

TABLE 1. Frequency distribution of scale and gill-raker counts in three species of *Chorististium*

|                    | Pored lateral-line scales |    |    |    | Caudal peduncle scales |    |    |    |    | Total gill rakers |    |    |    |
|--------------------|---------------------------|----|----|----|------------------------|----|----|----|----|-------------------|----|----|----|
|                    | 44                        | 45 | 46 | 47 | 34                     | 35 | 36 | 37 | 38 | 15                | 16 | 17 | 18 |
| <i>C. rubrum</i>   | -                         | 2  | 1  | 1  | 4                      | -  | -  | -  | -  | 1                 | 1  | -  | 2  |
| <i>C. eukrines</i> | 1                         | -  | -  | -  | -                      | -  | 1  | -  | -  | -                 | -  | 1  | -  |
| <i>C. mowbrayi</i> | -                         | -  | -  | 1  | -                      | -  | -  | -  | 1  | -                 | 1  | -  | -  |

(1, 29.8), ¼ mile N of St. Marc, St. Marc Bay, Haiti, in 10 to 30 feet, 22 December 1959, John E. Randall, CRR-Car-2.

*Description:* This species has been well characterized by Böhlke (1956). General body form and color pattern are shown in Fig. 1c. Counts of our specimens are given in Table 1 and morphometric data are provided in Table 2.

*Habitat:* The Florida specimens were collected in a coral reef habitat by means of rotenone and were not observed in life.

The above specimens constitute new records from their respective areas. Future collecting by means of rotenone and diving gear will probably extend the known range of this species throughout the West Indian area.

*Chorististium mowbrayi* (Woods and Kanazawa)

Fig. 1d, Tables 1 and 2

*Liopropoma mowbrayi* Woods and Kanazawa, 1951: 633-636, Fig. 134 (type locality: Bermuda).

*Material examined:* CNHM 48544 (1, 66.8), S shore of Bermuda, on beach after a storm, 20 August 1933, Louis L. Mowbray; holotype. UMML 7621 (1, 36.6), N of E end of Salt Cay, off Nassau, Bahamas, in 100 feet, 11 November 1960, John E. Randall, Henry A. Feddern, Carleton Ray. UMML 5537 (1, 17.5), ⅓ mile N of W end of Salt Cay, New Providence, Bahamas, in 170 feet, 28 June 1959, John E. Randall, Walter A. Starck, II, CRR-BWI-26.

TABLE 2. Measurements of three species of *Chorististium* expressed as per cent of standard length

|                      | <i>C. rubre</i> |              |              |              | <i>C. eukrines</i><br>ANSP<br>94357 | <i>C. mowbrayi</i><br>UMML<br>7621 |
|----------------------|-----------------|--------------|--------------|--------------|-------------------------------------|------------------------------------|
|                      | UMML<br>5307    | UMML<br>6148 | UMML<br>4232 | UMML<br>4140 |                                     |                                    |
| predorsal distance   | 47              | 48           | 46           | 46           | 47                                  | 47                                 |
| preanal-fin distance | 68              | 66           | 65           | 70           | 69                                  | 70                                 |
| greatest body depth  | 30              | 30           | 31           | 32           | 29                                  | 26                                 |
| head length          | 43              | 40           | 37           | 39           | 41                                  | 39                                 |
| snout length         | 10              | 9            | 10           | 10           | 10                                  | 10                                 |
| length of upper jaw* | 19              | 19           | 17           | 18           | 18                                  | 18                                 |
| eye diameter         | 10              | 10           | 9            | 8            | 8                                   | 10                                 |

\* Anteriormost tip of premaxillary to posteriormost point of maxillary.

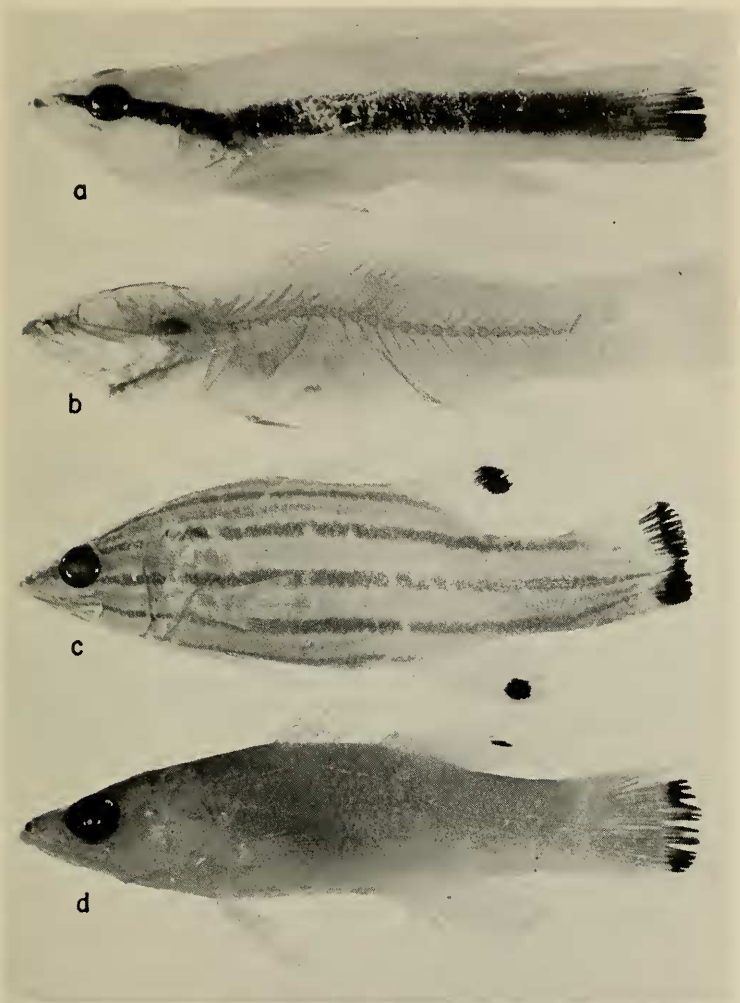


FIG. 1, a-d. *Chorististium eukrines*, new species. a.—Holotype, ANSP 94357; standard length 41.6 mm. b.—Radiograph of holotype. c.—*Chorististium rubre* (Poey), UMML 4140; standard length 64.9 mm. d.—*Chorististium mowbrayi* (Woods & Kanazawa), UMML 7621; standard length 36.6 mm.

*Description:* In addition to the description given by Woods and Kanazawa (1951) it can be added that the snout (except for the lips) and the maxillaries are scaled. The general body form is shown in Fig. 1d. Counts of Bahamian specimens are given in Table 1 and morphometric data are provided in Table 2. Pored lateral-line scale counts and number



of gill rakers of the 17.5 mm standard length specimen are only approximate and are not included in Table 1. They are: pored lateral-line scales—44; total gill rakers—17.

The following life colors are from a Kodachrome transparency of UMML 7621 for which we are indebted to John E. Randall. The body is pale orange from the snout tip to the area of the black band at the posterior end of the caudal fin (see Fig. 1d). Fin spines are chalky except those of the dorsal fin which are slightly tinted with orange. Scaled areas at the bases of the soft-dorsal and anal fins are pale orange. The fin membranes are colorless. The dark markings on the caudal and dorsal fins are black. The iris of the eye is golden.

Woods and Kanazawa (1951: 635) refer to a note by Louis L. Mowbray "on a fresh specimen" which states: "color as in *Gonioplectrus hispanus* (Poey). Red and yellow longitudinal stripes. Soft dorsal, anal and caudal tipped with jet black." These are not the life colors of this fish but are typical of those of *Chorististium rubre* which, apparently, Mowbray mistakenly identified with this species.

*Habitat*: Both Bahamian specimens were collected in a coral reef habitat in rather deep water adjacent to the dropoff along the northern edge of the Great Bahama Bank. The smaller specimen was taken along the steeply sloping face of the dropoff itself. The larger specimen was collected a short distance from the dropoff. Both specimens were taken with rotenone and were not observed in life. *C. mowbrayi* is here recorded for the first time from the Bahamas.

*Chorististium mowbrayi* was known previously only from the type. The holotype was washed ashore following a storm. The Bahamian specimens were taken in 100 to 170 feet. The scarcity of specimens probably reflects the deepwater habits of the species. Future collecting by means of diving gear may extend the known range of *mowbrayi* into the West Indian area and possibly Florida.

*Discussion*: All specimens examined of the three species of *Chorististium* had 8 dorsal spines, 12 dorsal rays, 3 anal spines, 8 anal rays, and 13 pectoral rays. One specimen of each species was X-rayed and each had 10 precaudal and 14 caudal vertebrae.

The relationships of the genera *Pikea* Steindachner, 1875 (type species: *Pikea lunulata* = *Grystes lunulatus* Guichenot, 1863), *Chorististium* Gill, 1862 (type species: *Liopropoma rubre* Poey, 1861) and *Liopropoma* Gill, 1861 (type species: *Perca aberrans* Poey, 1861) are uncertain. We find no reference to anyone's having examined the types of *lunulata* or *aberrans*. Attempts to locate the type of the latter species have failed and we doubt its existence. Apparently studies of *Pikea* and *Liopropoma* have been based on the literature.

Following the generic description of *Pikea*, Steindachner (1875) describes two specimens from Mauritius which he identifies with *lunulata*. However, his specimens had a dorsal-ray count of eight spines and twelve soft rays and Guichenot (1863) cites ten spines and eleven rays in the description of *lunulata*. Steindachner states that Guichenot was

probably in error. He further describes a shallowly notched spinous-dorsal fin whereas Guichenot states for *lunulata* "la partie épineuse de la dorsale est séparée de la molle par une échanerure profonde." In a later paper Steindachner and Döderlein (1883: Pl. 6, Fig. 2) illustrate *lunulata* but no mention of it is made in the text. The only explanation is the legend for the figure (p. 242) which states "*Pikea lunulata* Steind. (sp. Guichenot?), siehe Steind. . . (1874)." Evidently this is a figure of one of the Mauritius specimens, the identity of which Steindachner questions. Examination of the type of *lunulata* Guichenot (presumably in the Paris Museum) can clarify the position of *Pikea*.

*Liopropoma* can be separated from *Chorististium* or *Pikea* only on the basis of its having nine dorsal spines. This may be incorrect and if correct would probably not warrant separate generic ranking unless other differentiating characters could be found.

Schultz (1958) distinguishes *Chorististium* by the presence of eight dorsal spines and a separation of the spinous- and soft-dorsal fins by several rows of scales whereas *Pikea* is characterized by eight dorsal spines and the spinous- and soft-dorsal fins being continuous by a ridge of scales along the sides of the connecting dorsal spines. He retains *Liopropoma* on the basis of nine dorsal spines (*aberrans* Poey, 1861 and *roseus* Gunther, 1880). As these genera are not clearly defined at present we are tentatively placing *eukrines* and *Liopropoma mowbrayi* in the genus *Chorististium*, both species differing from *C. rubre* primarily in the separation of the dorsal fins and in color pattern.

The dorsal fins of *Chorististium mowbrayi* and *C. eukrines* are separated by a raised ridge formed by scales over the posterior dorsal spines except at their tips. When the spines are lifted the scales may separate slightly to give the appearance of a groove. The differences between a condition in which the scales meet dorsally to one in which they overlap and continue smoothly across the back are slight. This may be due to the fullness of the body at that point. Both *eukrines* and *mowbrayi* are moderately compressed in that area and, therefore, the scales of each side meet at a more acute angle dorsally than in *rubre*, which is a more robust form. We do not believe that such a slight difference merits separate generic ranking.

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## ADDENDUM

Since this paper was submitted three additional specimens of *C. eukrines* have been brought to our attention. From the U.S. Fish and Wildlife Service Laboratory at Brunswick, Ga., we received two specimens, the larger one (84.3 mm in standard length) from Lat. 29°19'N, Long. 80°13'W, in 38 to 39 fathoms, 24 September 1961, SILVER BAY sta. 3431, and the other (65.1 mm in standard length) from Lat. 27°40'N, Long. 79°58'W, in 50 fathoms, 1 February 1961, SILVER BAY sta. 2721. The third specimen (66 mm in standard length), from the Florida State Board of Conservation Marine Laboratory, St. Petersburg, Fla., was taken in the Gulf of Mexico, offshore from St. Petersburg, from a grouper stomach, 19 August 1961, by B. Forsmark. All three specimens have 8 dorsal spines and 12 soft dorsal rays, 3 anal spines and 8 soft anal rays, 17 principal and 19 striated caudal rays, 1 pelvic spine, 5 pelvic rays and 7 branchiostegals.

The specimen from SILVER BAY 3431 has 14 pectoral rays, 16 gill rakers, 46 lateral-line scales (damaged) and 34 caudal peduncle scales (damaged) while the fish from SILVER BAY



2721 has 14 pectoral rays, 18 gill rakers, 46 lateral-line scales (damaged). Scales are missing in the caudal peduncle region.

The St. Petersburg specimen has 13 pectoral rays and 17 gill rakers. Scales are mostly missing on this fish.

Measurements expressed in percentages of standard length

|                      | Silver Bay<br>3431 | Silver Bay<br>2721 | St. Petersburg<br>Specimen |
|----------------------|--------------------|--------------------|----------------------------|
| predorsal distance   | 43                 | 48                 | 43                         |
| preanal-fin distance | 69                 | 71                 | 73                         |
| greatest body depth  | 25                 | 25                 | 22                         |
| head length          | 39                 | 36                 | 35                         |
| snout length         | 11                 | 10                 | 9                          |
| length of upper jaw  | 17                 | 16                 | 16                         |
| eye diameter         | 8                  | 8                  | 8                          |

We designate these specimens as paratypes.

An additional specimen of *C. rubre*, UMML 9655, 56.5 mm in standard length, was collected on Banco Chinchorro around Cayo Norte, Yucatan, 23 June 1961, by Walter A. Starck, II, WAS-Carib-8. This extends the known range of *rubre* to the western Caribbean.